

Math 1060 Exam 1 (1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4)

Your exam will be “closed book” - no notes or formula cards allowed. Calculators will *NOT* be allowed on a significant portion of the test.

Chapter 1:

- 1) Find coterminal angles.
- 2) Convert from degrees, minutes, seconds to decimal degrees and vice versa
- 3) Convert from radians to degrees and from degrees to radians.
- 4) Find arc length and the area of a sector.
- 5) Solve problems involving linear and angular velocity.
- 6) Be able to obtain the trigonometric functions of an angle in standard position given a point on the terminal side.
- 7) Know and use the reciprocal identities. Also, know $\tan \alpha = \frac{\sin \alpha}{\cos \alpha}$.
- 8) Know the values of the trigonometric functions of “common” angles: $0, \frac{\pi}{6}, \frac{\pi}{4}, \frac{\pi}{3}, \frac{\pi}{2}$.
- 9) Know the signs of the trigonometric functions in each quadrant.
- 10) Combine items 8 and 9 to find the values of the trigonometric functions of all the “common” angles between 0 and 2π .
- 11) Find the trigonometric values of angles larger than 90° using a reference angle.
- 12) Solve right triangles. This may involve the following:
 - a) Find the length of a side of a right triangle by using the Pythagorean Theorem.
 - b) Evaluate expressions involving inverse trigonometric functions.

Chapter 2:

- 1) Graph the sine and cosine functions.
- 2) Identify and use amplitude, period, and phase shift to graph transformations of sine and cosine.
- 3) Write an equation of the form $y = a \sin[b(x - c)] + d$ or $y = a \cos[b(x - c)] + d$ when given the graph of a sinusoidal function.
- 4) Find the frequency of sine and cosine functions. Understand the relationship between frequency and the period of the function. Be able to find the period when given the frequency and vice versa.
- 5) Graph secant and cosecant functions and their transformations. Be able to state all the vertical asymptotes and identify the period.
- 6) Graph tangent and cotangent functions and their transformations. Be able to state all the vertical asymptotes and identify the period.
- 7) Know how to find the domain and range of trigonometric functions.

Math 1060 Exam 2 (3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4)

Your exam will be “closed book” - no notes or formula cards allowed. Calculators will *NOT* be allowed on a significant portion of the test.

Chapter 3:

Work with trigonometric identities:

- 1) Express tangent, cotangent, secant, and cosecant in terms of sine and/or cosine.
- 2) Use the Pythagorean Identities.
- 3) Use the Odd and Even Identities.
- 4) Combine items 1-3 to simplify trigonometric expressions or prove that an equation is an identity.
- 5) Use the sum and difference identities and cofunction identities to simplify an expression, find the exact value of a trigonometric expression, or prove that an equation is an identity.
- 6) Use the double-angle identities and half-angle identities to simplify an expression find the exact value of a trigonometric expression, or prove that an equation is an identity.

Chapter 4:

Understand Inverse Trigonometric Functions:

- 1) Find exact values of inverse trigonometric functions. You must know the range of the inverse trigonometric functions to find these values.
- 2) Find exact values of compositions of trigonometric functions and inverse trigonometric functions.
- 3) Convert compositions to algebraic expressions.

Solve Trigonometric equations:

- 4) Solve basic trigonometric equations.
- 5) Solve multiple angle equations.
- 6) Solve trigonometric equations of quadratic type and equations that require the use of trigonometric identities.)

Math 1060 Exam 3 (5.1, 5.2, 5.3, 5.4, 5.5)

Your exam will be closed book - no notes or formula cards allowed. Calculators will be allowed on this test, but you must show your work for credit.

Chapter 5:

Solve Oblique Triangles:

- 1) Use the Law of Sines to solve triangles—including the ambiguous case.
- 2) Use the Law of Cosines to solve triangles.
- 3) **Find the area of a triangle.**

Work with Vectors:

- 4) Find scalar multiples, sums, and differences of vectors algebraically and geometrically.
- 5) Find horizontal and vertical components of a vector.
- 6) Find magnitude and direction of a vector.
- 7) Find the dot product.
- 8) Find the angle between vectors.
- 9) Solve application problems involving vectors.

Chapter 6:

- 10) Find the absolute value or modulus of a complex number.
- 11) Graph complex numbers.
- 12) Given a complex number in standard form, $a + bi$, write the number in trigonometric form, $r(\cos \theta + i \sin \theta)$.
- 13) Given a complex number in trigonometric form, $r(\cos \theta + i \sin \theta)$, write the number in standard form, $a + bi$.
- 14) Find products and quotients of complex numbers using trigonometric form.
- 15) Find powers and roots of complex numbers using trigonometric form.

Math 1060 Exam 4 (6.4, 6.5)

Your exam will be closed book - no notes or formula cards allowed. Calculators will be allowed on this test, but you must show your work for credit.

- 1) Graph points in polar form.
- 2) Convert coordinates from rectangular to polar and from polar to rectangular.
- 3) Convert equations from rectangular to polar and from polar to rectangular.
- 4) Graph polar equations (cardioid, limaçon, lemniscate, rose, lines, and circles), finding exact (r, θ) points that lie on the graph.
- 5) Complete a “ t - x - y table” and graph a curve defined parametrically.
- 6) Eliminate the parameter in a pair of parametric equations.
- 7) Write a pair of parametric equations for a line segment given the endpoints, or a portion of a circle centered at the origin given the radius.